

SHVOIN, T. D.

Engg., All-Union Electrical Engineering Inst. im. V. I. Lenin, -cl942-. "A High Voltage Mercury-Jet Transformer," Elektrichestvo, No. 3, 1947; "Induction Ignition of Mercury-Arc Rectifiers," ibid., No. 5, 1948.

CA SHKOLINA, I.D.

19

Hermetic seal for metal-ceramic joints. I. D. Shkolina.  
U.S.S.R. 69,673, Nov. 30, 1947. For obtaining a her-  
metic seal between the ceramic and the metal an insert of  
Ag is used. M. Hosh.

InK. 11. 11. 11.

Data from separators of the Gorskoy system for aline sampling;  
presented in prospecting area of the Northwestern Geological  
Administration. Nat. geol. i pol. i skop. Sev. Zap. RSFSR  
no. 3-1990-1991 '62. (MIRA 17.12)

AUTHORS: Korshak, V. V., Corresponding Member SOV/20-122-4-19/57  
AS USSR, Mozgova, K. K., Shkolina, M. A.

TITLE: On the Production of Grafted Copolymers of Polyamides With  
Vinyl Monomers (O poluchenii privitykh sopolimerov poliamidov  
s vinil'nyimi monomerami)

PERIODICAL: Doklady Akademii nauk SSSR, 1958, Vol 122, Nr 4, pp 609-611  
(USSR)

ABSTRACT: As grafted copolymers open new synthetic possibilities, they  
have attracted lately to an ever greater extent the attention  
of the researchers (Refs 1, 2). In all hitherto known methods  
the formation of grafted copolymers is accompanied by that of  
block polymers in most cases. The authors tried to work out a  
production method which does not lead to the formation of block  
copolymers. For this purpose the initial polyamides were treated  
with ozone and only subsequently with vinyl monomers: styrene  
or methyl-methacrylate. Thus, a layer of the injected copolymer  
appeared on the surface of the polyamide. First the ozone in-  
fluence on polyamides during different intervals was rechecked  
(2 minutes - 6 hours). The measurement results of the mentioned  
layer are shown in table 1. They show that the quality indices

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On the Production of Grafted Copolymers of Polyamides SOV/20-122-4-19/57  
With Vinyl Monomers

of the caprone film are not reduced, but are even increased by a short ozonization (10 - 20 minutes). Quality is reduced only in the case of an ozonization lasting 1 hour and more. Quality also decreases when the produced polymer layers are heated up to five hours. Further experiments with covers of polyamide anide G-669 (Ref 3) yielded the results compiled in table 2. They show the same picture as in the case of polycaprolactame (Ref 3). Table 3 shows measuring results of the initial samples of the polyamides and the same samples after ozonization and polymerization. They show that the specific viscosity of the solution increases after ozonization. A still greater increase is observed after polymerization of an ozonized sample of the polyamide. Table 4 shows elementary analyses of several injected copolymers. From the results obtained the authors draw the conclusion that in consequence of the procedure used by them, a layer of polystyrene or polymethyl-methacrylate is formed which is apparently to be found on the surface of the polyamide film or of the polyamide fiber and is chemically connected with them. The vaccinated layer does not increase unlimitedly, it does not surpass 20 percentages by weight. Polyamide loses its

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On the Production of Grafted Copolymers of Poly-  
amides With Vinyl Monomers

SOV/20-122-4-19/57

solubility in alcohol in this connection as well as the solubility in cresol and formamide. A probable reaction scheme is given. Obviously peroxide compounds are produced first in the amide groups of the polyamide subsequently joined by molecules of the vinyl monomer. There are 3 tables and 3 references, 1 of which is Soviet.

ASSOCIATION: Institut elementoorganicheskikh soyedineniy Akademii nauk SSSR  
(Institute of Elementary Organic Compounds of the Academy of Sciences, USSR)

SUBMITTED: June 19, 1958

Card 3/3

SHKOLINA, M. A. Cand Chem Sci -- (diss) "Synthesis and study of poly-4-amino-1,2,4- triazoles." Mos, 1959. 6 pp (Acad Sci USSR. Inst of Elementoorganic Compounds). (KL, 52-59, 117)

-23-

KORSHAK, V.V.; MOZGOVA, K.K.; SHKOLINA, M.A.

Preparation of graft copolymers. Part 3: Grafting of vinyl monomers  
on polyamides. Vysokom. soed. 1 no.9:1364-1368 S '59.  
(MIRA 13:3)

1. Institut elementoorganicheskikh soedineniy AN SSSR.  
(Polymers) (Amides)



KORSHAK, V.V.; MOZGOVA, K.K.; SHKOLINA, M.A.

Preparation of graft polymers. Part 4: Grafting of styrene on  
polyamides.. Vysokom.soed. 1 no.11:1573-1579 N '59.  
(MIRA 13:5)

1. Institut elementoorganicheskikh soedineniy AN SSSR.  
(Polymers) (Styrene) (Amides)

KORSHAK, V.V.; MOZGOVA, K.K.; SHKOLINA, M.A.

Preparation of graft copolymers. Part 5: Grafts by vinyl monomers on polyethylene terephthalate. Vysokom.soed. 1 no.11:1604-1609 N '59. (MIRA 13:5)

1. Institut elementoorganiheskikh sovedinaniy AN SSSR.  
(Terephthalic acid) (Vinyl compounds)

KORSHAK, V.V.; CHELNOKOVA, G.N.; SHKOLINA, M.A.

Mixed poly-4-amino-1,2,4-triazoles. Vysokom.soed. 1 no.12:  
1772-1777 D '59. (MIRA 13:5)

1. Institut elementoorganicheskikh soyedineniy AN SSSR.  
(Triazole)

5(3)

SOV/62-59-5-26/40

AUTHORS:

Korshak, V. V., Chelnokova, G. N., Shkolina, M. A.

TITLE:

Synthesis of the Poly-4-amino-1,2,4-triazoles (Sintez poli-4-amino-1,2,4-triazolov)

PERIODICAL:

Izvestiya Akademii nauk SSSR. Otdeleniye khimicheskikh nauk, 1959, Nr 5, pp 925-926 (USSR)

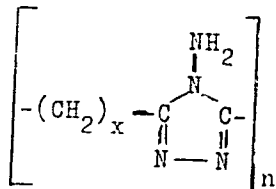
ABSTRACT:

In this paper the reaction of hydrazine with a number of dicarboxylic acids and their derivatives at a molar ratio of 2:1 was investigated with eucosane dicarboxylic acid, sebacic-, azelaic-, adipic-, glutaric-, succinic-, and thiodivalerianic acid. The substances obtained were investigated as to their thermomechanical and mechanical properties (Figs 1,2). A surplus of 90 mol % hydrazine was found to be the optimum quantity for the purpose of obtaining pure products with respect to the quantity of hydrazine necessary for the formation of the dihydrazide of the individual acids. The structure of the polytriazoles obtained on the basis of the investigations carried out is assumed to be the following:

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Synthesis of the Poly-4-amino-1,2,4-triazoles

SOV/62-59-5-26/40



where  $x = 2, 3, 4, 7, 8, 20$ .

The presence of the amino group was proved. Besides, the hydrochloric- and sulfuric acid salts of polyoctamethylene-amino-triazole were produced and by acetylation with acetic anhydride from the polyaminotriazole of the sebacine-hydrazide also N-acetyl-aminotriazole. All products obtained are very stable, and they are not destroyed by boiling in hydrochloric acid and lye. As a film polyoctamethylene-triazole has a great tearing strength  $\sim 850 \text{ kg/cm}^2$  (Fig 2). There are 2 figures.

ASSOCIATION:

Institut elementoorganicheskikh soyedineniy Akademii nauk SSSR  
(Institute of Elemental-organic Compounds of the Academy of Sciences, USSR)

SUBMITTED:  
Card 2/2

September 9, 1958

5(3)

SOV/62-59-5-28/40

AUTHORS: Korshak, V. V., Chelnokova, G. N., Shkolina, M. A.

TITLE: On the Problem of the Formation Mechanism of Polyaminotriazoles  
(Kvcpros u mekhanizme obrazovaniya poliaminotriazolov)

PERIODICAL: Izvestiya Akademii nauk SSSR. Otdeleniye khimicheskikh nauk,  
1959, Nr 5, pp 929-931 (USSR)

ABSTRACT: In a previous paper by the same authors (Ref 1) the polycondensation of various dicarboxylic acids with hydrazine was investigated; it was found that in the polycondensation of sebacic acid with hydrazine the nitrogen content of the dihydrazide obtained was somewhat lower than the theoretically calculated content. Agreement with theoretical calculation was obtained only by using a certain surplus of hydrazine. Reference is made to V. W. Fischer (Ref 2), who found it necessary to use the excess hydrazine in order to prevent the possible formation of polyhydrazides and polyoxadiazoles which is possible in this reaction. In connection herewith the polycondensation of hydrazine in the following dicarboxylic acids: sebacic acid, phthalic, isophthalic, and terephthalic acid was investigated in this paper. The characteristics of the salts

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On the Problem of the Formation Mechanism of Polyaminotriazoles

obtained are given in a table. On the one hand, the polycondensation with equimolar ratios hydrazine : dicarboxylic acid, where polyhydrazide was obtained, was investigated, and on the other, the molar ratio 2 (and more) : 1 resulted in polyaminotriazole by the application of pressure. The reaction scheme is assumed to be the following: First, the dihydrazide is formed immediately from the salt of the dicarboxylic acid and hydrazine. The dihydrazine can then be converted under pressure nearly quantitatively into an aminotriazole compound with separation of water. For the conversion of polyhydrazide into the aminotriazole ring an additional surplus of hydrazine is finally necessary. This surplus has a maximum. If the maximum is exceeded, this causes impurities due to polyhydrazide and its hydrolysis-products. Poly-4-amino-1,2,4-triazole is represented. There are 1 table and 2 references, 1 of which is Soviet.

ASSOCIATION: Institut elementoorganicheskikh soedineniy Akademii nauk SSSR  
(Institute of Elemental-organic Compounds of the Academy of Sciences, USSR)

SUBMITTED: September 18, 1958  
Card 2/2

83707

S/190/60/002/006/012/012  
B015/B064

15.8107 also 2209

11.2217  
AUTHORS:

Korshak, V. V., Mozgova, K. K., Shkolina, M. A.

TITLE:

Letters to the Editor. New Method of Producing Grafted  
Polymers //

PERIODICAL:

Vysokomolekulyarnyye soyedineniya, 1960, Vol. 2, No. 6,  
pp. 957-958

1  
S:

TEXT: In continuation of the experiments in the course of which already  
a new method of producing graft copolymers has been developed (Refs. 1-5),  
it was observed that film and fiber samples of polyamides and polyesters  
obtain a higher amount of active centers by storage in the air; thus,  
grafting with monomers can be carried out also without a preliminary  
treatment with ozone. A new, simpler method of producing graft copolymers  
was developed on this basis, i.e. articles in the form of films and  
fibers are for some time heated in the air before copolymerization. This  
preliminary treatment leads to the formation of active centers so that at  
a further heating with vinyl monomers copolymerization takes place. The  
graft copolymers obtained have a higher mechanical strength than the

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28177

S/190/61/003/010/005/019  
B130/B110

53830

AUTHORS: Korshak, V. V., Mozgova, K. K., Shkolina, M. A.

TITLE: Synthesis of graft copolymers. VII

PERIODICAL: Vysokomolekulyarnyye soyedineniya, v. 3, no. 10, 1961,  
1462-1467

TEXT: The authors describe the possibility of producing graft copolymers from polyamide and polyester films and vinyl monomers without the use of ozone. Films of mixed polyamide П-669 (G-669) stored for different periods of time were used for the investigation. The monomer used was styrene. Tests showed that a freshly prepared polyamide grafted only 2-3% polystyrene, a one-year old up to 9%, and a 6-year old 30-60%. In the 6-year old polyamide, active centers formed by the action of atmospheric oxygen and moisture. The effect of atmospheric oxygen and air was studied at various temperatures. It was shown that a sample grafting no more than 2.5% polystyrene, grafted 20% after thermal treatment in air at about 80°C. In thermal treatment of caprone films, grafting was also

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28177

S/190/61/003/010/005/019  
B130/B110

Synthesis of graft copolymers. VII

increased but not to such an extent as in the treatment of G-669. Lavsan films heated in nitrogen showed better grafting than those not heated, but did not attain such a degree as when heated in an air flow. The tests also showed that the heating did not only activate the polymers but also improve their mechanical properties. The breaking elongation of Lavsan films heated at 80°C increased by 48.8%, that of caprone films by 176%. No positive results have been obtained yet when trying to find free radicals by an epr spectrum. Infrared and ultraviolet spectra showed no considerable change due to thermal treatment of caprone. The ultraviolet spectrum of heated Lavsan suggested a formation of groups containing CO.  $\gamma$ -ray patterns showed higher orderliness of the molecular chain of heated samples. The breaking elongation of samples was tested at the VNIIS, the infrared and ultraviolet spectra were taken at I. V. Obreimov's laboratory, the X-ray pictures at A. I. Kitaygorodskiy's laboratory. A. V. Zasechkina and A. I. Volkova assisted in experiments. There are 2 figures, 8 tables, and 6 Soviet references.

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28177

Synthesis of graft copolymers. VII

S/190/61/003/010/005/019  
B130/B110

ASSOCIATION: Institut elementoorganicheskikh soyedineniy AN SSSR  
(Institute of Elemental Organic Compounds AS USSR)

SUBMITTED: November 3, 1960

X

Card 3/3

29736

S/190/61/003/011/005/016

B124/B101

15.5540

2209

AUTHORS: Korshak, V. V., Mozgova, K. K., Shkolina, M. A.

TITLE: Synthesis of graft copolymers. VIII

PERIODICAL: Vysokomolekulyarnyye soyedineniya, v. 3, no. 11, 1961, 1655-1660

TEXT: Results obtained when styrene is grafted to heat-activated caprone fiber are given in this paper. The effect of the time of thermal treatment of the fiber on the yield of grafted polystyrene is studied at temperatures ranging from 80 to 150°C in a nitrogen stream and in air (Fig. 1). Up to 20 min from the beginning, active centers of copolymerization of the fiber with styrene are formed at 80°C in nitrogen, with no further oxidation of the fiber occurring on heating. When kept at a constant temperature of 80°C in air, two maxima appear, the first of which is due to the presence of active centers prior to heat treatment, and the second to the secondary formation of active groups by oxidation. From data given in Fig. 1 it can be further concluded that the yield of grafted polystyrene increases with the time of copolymerization, and that the formation of active centers in the fiber is accelerated by a temperature rise. Maximum yield of graft

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29736  
S/190/61/003/011/005/016  
B124/B101

Synthesis of graft copolymers. VIII

copolymer is obtained when the fiber is kept at 110°C in a thermostat for 3 min, with true temperature in the thermostat and, thus, also of the sample being about 90°C. From measured viscosity values of the graft copolymers, optimum results were obtained under the same conditions as mentioned (Table 1). A polystyrene layer can be grafted to the caprone fiber with yields up to 30 % and a molecular weight up to 60,000-80,000 (Table 2). It is shown that the described grafting takes place essentially on the surface of the polymer. A. P. Zasechkina and A. I. Volkova took part in experimental work. There are 3 figures, 2 tables, and 5 references: 4 Soviet and 1 non-Soviet. The reference to the English-language publication reads as follows: A. J. Goldberg, W. P. Hohenstein, H. Mark, J. Polymer Sci., 2, 503, 1947. X

ASSOCIATION: Institut elementoorganicheskikh soyedineniy AN SSSR  
(Institute of Elemental Organic Compounds AS USSR)

SUBMITTED: December 7, 1960

Card 2/6 2

41119

S/190/62/004/010/003/010  
B144/B186

AUTHORS: Korshak, V. V., Mozgova, K. K., Shkolina, M. A.,  
Korostylev, B. M., Linovetskaya, O. Ya., Zasechkina, A. P.

TITLE: Synthesis of graft copolymers

PERIODICAL: Vysokomolekulyarnyye soyedineniya, v. 4, no. 10, 1962,  
1462-1473

TEXT: The copolymerization of polyethylene terephthalates (I) ("Lavsan", Hochtaphan, Cronar) with monomers and monomer mixtures was studied in an attempt to increase the adhesiveness between (I) and the photographic emulsion layer containing gelatin. After a heat treatment of no more than 10 min at 90 - 120°C, the samples were kept immersed in the monomer or monomer mixture for 7 - 64.5 hrs at 40 - 80°C. 2-methyl-5-vinyl pyridine, vinyl pyrrolidone, and methyl methacrylate (II) were used singly or in mixtures with acrylonitrile, methacrylic acid (III), epoxy resin, styrene, carbinol cement, and gelatin dissolved in acrylic acid (IV). After treatment with solvents such as benzene or water, and desiccation, the adhesiveness was examined by way of the 5-ball system.

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Synthesis of graft copolymers

3/120/62/004/010/003/010  
B144/B186

The tensile strength of 3 · 10<sup>4</sup> specimens was tested with a Schopper dynamometer at an elongation rate of 10 cm/min. Laysan, Hostaphan, and Gomer behaved similarly. The best adhesiveness was reached by copolymerizing (I) with (II-III) mixtures independently of their mixing ratio, and with (IV) in thin monomer layers (2 - 5% by weight). The viscosity could not be tested, as (I) after grafting, was no longer soluble in xylene. Grafting reduced the elongation at rupture, whilst slightly increasing the tensile strength, but did not affect the optical properties and orientation. There are 1 figure and 4 tables.

ASSOCIATION: Institut elementoorganicheskikh sovedineniy AN SSSR  
(Institute of Elemental Organic Compounds AS USSR)

SUBMITTED: May 20, 1961

Card 2/2

S/190/63/005/002/002/024  
B101/B102

AUTHORS:

Korshak, V. V., Mozgova, K. K., Shkolina, M. A.,  
Nagdaseva, I. P., Berestnev, V. A.

TITLE:

Synthesis of graft copolymers. XII

PERIODICAL:

Vysokomolekulyarnyye soyedineniya, v. 5, no. 2, 1963,  
171-175

TEXT: Tests are discussed in reference to the grafting of acrylic and methacrylic acids onto caprone fiber at room temperature and the stabilization of the graft copolymer by metal salts. Commercial caprone threads with Schopper strength 14.3 kg were heated at 80-120°C and then immersed for a short time in anhydrous acrylic or methacrylic acid at room temperature. This mild treatment, chosen because of the sensitivity of the polyamide to acids, yielded only a thin microfilm on the fiber, so the grafting could not be determined from the increase in weight of the fiber. In the threads of graft copolymer, the strength was considerably reduced after 100 hrs heating at 150°C; the highest value was 38% residual strength. Treatment of the threads of graft copolymers for several hours with 2.5-5%

Card 1/2



KORSHAK, V.V.; MOZGOVA, K.K.; SHKOLINA, M.A.; NAGDASEVA, I.P.;  
BERESTNEV, V.A.; Primali uchastiye: YEGOROVA, Yu.V.;  
ZASECHKINA, A.P.; VOLKOVA, A.I.; SAZONKINA, M.T.

Preparation of graft copolymers. Part 12. Vysokom.soed. 5  
no.2:171-175 F '63. (MIRA 16:2)

1. Institut elementoorganicheskikh soyedineniya AN SSSR.  
(Polymers)

2

KORSAK, V.V., MOZGOVA, K.K., SHKOLINA, M.A.

Surface grafting of vinyl monomers.

Report submitted for the International Symposium of Macromolecular chemistry  
Paris, 1-6 July 63

S/139/62/000/004/018/018  
E039/E420

AUTHORS: Levkov, A.N., Shkolina, Ye.I.

TITLE:

The magneto-optical properties of alloys in the Ni-Co system in the region of small Co content

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. Fizika, no.4, 1962, 182-184

TEXT: The early experiments on the Kerr and Faraday effects are discussed briefly. An experimental investigation of the dispersion and concentration dependence of the Kerr effect in the Ni-Co system is described for Co concentrations up to 22% at. Co. 12 Samples are used to cover this range at 2% intervals. A mirror surface is produced on the samples by mechanical burnishing and polishing and the effect of this on the properties of the surface layers is discussed. The samples are heated at 420°C at a pressure of  $10^{-4}$  mm Hg for 2 hours to restore the crystal structure in the surface layers without destroying the mirror finish. It is shown that the addition of Co to Ni up to 22% At. Co does not change the Kerr effect dispersion significantly in the visible region of the spectrum. A slight increase in the Kerr effect is

Card 1/2

BURAKAUSKAS, A.A.; SHKOLLER, S.; SOYDRO, I.G.; STUKONozHENKO, P.

Achievements of veterinary service in the Baltic republics during the 25 years of Soviet rule. Veterinariia 42 no.8:10-16 Ag '65. (MIRA 18:11)

1. Nachal'nik Upravleniya veterinarii Litovskoy SSR (for Burakauskas).
2. Glavnyy veterinarnyy vrach Upravleniya veterinarii Litovskoy SSR (for Shkoller).
3. Nachal'nik Upravleniya veterinarii Estonskoy SSR (for Soydro).
4. Zamestitel' nachal'nika Upravleniya veterinarii Latvyskoy SSR (for Stukonozhenko).

BURAKAUSKAS, A.A.; SHKOLLER, S.D.

Twenty years of veterinary service in the Lithuanian S.S.R.  
Veterinariia 37 no.10:5-12 0 '60. (MIRA 15:4)

1. Veterinarnoye upravleniye Ministerstva sel'skogo khozyaystva  
Litovskoy SSR.

(Lithuania--Veterinary medicine)

ca

The use of Aleksandriiskii brown coal for obtaining  
organo-mineral fertilizers. K. N. Shushkin and B. A. Shkol'man, *J. Chem. Ind. (U. S. S. R.)* 15, No. 9, 1-4  
(1938).—The coal is treated with  $\text{NH}_3$  and  $\text{H}_3\text{PO}_4$  and  
gives a good fertilizer. H. M. Leicester

ASAC METALLURGICAL LITERATURE CLASSIFICATION

LIST AND INDEX																										INDEX AND LIST																									
PROCESSES AND PROPERTIES INDEX																										INDEX AND LIST																									
<p><i>The use of blast-furnace slag for purification of coke gas.</i>  <i>By E. Shkol'man and M. Ya. Gubergits. J. Chem. Ind. (U.S.S.R.) 18, No. 3, 6-11(1941). Blast-furnace slag can replace wood shavings as a filler in purification of coke-oven gases from NO and H<sub>2</sub>S. At linear gas speeds of 24 mm/sec. it removes 50-60% NO and 30-50% H<sub>2</sub>S. In the absence of H<sub>2</sub>S, NO removal is higher. The phys. form of the slag is not changed, and the slag can be regenerated by passing pure air over it for 27 hrs. at 20-30°. Addn. of lime to the slag does not improve its properties.</i>  H. M. Leicester</p>																																																			
<p>AT&amp;SLA METALLURGICAL LITERATURE CLASSIFICATION</p>																																																			

*CA*

Determination of free phthalic anhydride in glyptal resins. E. B. Shkol'man and I. A. Popova. *Zhur. Priklad. Khim.* (J. Applied Chem.) 22, 135-41(1949).— Dissolve the sample in 5% acetone by heating for 10-30 min. at 55-60°. Titrate an aliquot with 0.1 N KOH to get the total acidity. To another aliquot add dry MeOH to methylate the sample and titrate with KOH. The acidity due to phthalic anhydride is twice the difference between the 2 results. Phenolphthalein should be used as indicator.  
G. M. Kowalski



SHKOL'MAN, YE. YE.

PA 67/49T61

USSR/Chemistry - Rosin  
Varnish

Aug 49

"The Use of the Pentaerythritic Ester of Rosin,"  
Ye. Ye. Shkol'man, I. R. Morozov, Gen Plant Lab,  
Chelyabinsk Paint and Dye Plant, 8 pp

"Zhur Prikl Khim" Vol XXII, No 8 pp 842-45

Esterification of rosin with pentaerythrite is analogous to its esterification with glycerin. From the standpoint of melting point and in regard to elasticity, the pentaerythritic ester of rosin is a better product than rosin glyptal for which it substitutes. This ester is used in the production

67/49T61

USSR/Chemistry - Rosin (Contd)

Aug 49

of oily varnishes which do not use tung oil as a base. For cold-drying varnishes, however, it may be used along with the tung oil. Both the varnishes and enamels derived from this ester are superior to those obtained from the glycerin ester. In nitro varnishes and nitro enamels it may substitute both for the glycerin ester and for rosin glyptal. Collodion unites perfectly with it and with the mineral portion of pentaerythrite. Submitted 20 Jul 48.

67/49T61

eA

10

Process of formation of alkyl resins. 1. Kinetics of the formation of acid esters in the reaction between phthalic anhydride and glycerol. R. B. Shkol'man and I. I. Zeldner (Chelvybinsk Pigment Plant). *Zhur. Priklad. Khim.* (I. Applied Chem.) 23, 81-88 (1950); *J. Applied Chem.*

*U.S.S.R.* 23, 79-97 (1950) (English translation).—The reaction between  $\alpha$ -C<sub>6</sub>H<sub>4</sub>(CO)<sub>2</sub>O (I) and glycerol (II) proceeds in 2 stages, esterification to acid mono- and diesters of phthalic acid, followed by condensation to polyesters. Expts. were made in the temp. range 140-180° with mol. ratios II:I = 1:1 to 1:3. Acidimetric titration of the products gave the total acidity  $A$  = (in % of the amt. of I introduced) sum of the free CO<sub>2</sub>H groups of the acid esters + free I + free phthalic acid (III), and, by sep. titration, the acidity  $B$  of the resin; the amt. of free I (in % of the amt. introduced) is then  $P' = 2(A - B)$ . During the 1st stage,  $B = 50\%$  (actually somewhat higher, 51%, owing to the presence of some H<sub>2</sub>O in II), and  $P' = 2(A - 50)$ ; the acidity due to the CO<sub>2</sub>H groups of the products is during that stage,  $N = A - P'$ , the fraction of I consumed in the formation of the esters is  $2N$ , and the amt. of I reacted (in % of the amt. introduced) is  $F = 100 - A$ . In the 1st stage,  $F = N$ , and in the 2nd stage,  $F > N$ , with  $C = F - N$  = amt. of I bound in the neutral groups of the resin. On the assumption that one OH group of II can bind one anhydride ring, freeing one CO<sub>2</sub>H group, the fraction (in %) of II reacted is  $y = (2b/3a)F$ , where  $a$  = initial no. of moles of II, and  $b$  = initial no. of moles of I, and the no. of moles of OH groups reacted is  $x = 2bF/100$ . For the 1st stage of the process, the 2nd-order rate equation is  $dx/dt = k(na - x)(mb - x)$ , where  $n$  = no. of OH groups of II, and  $m$  = no. of anhydride rings of I involved in the

reaction. At const.  $a + b = 2$ ,  $a = b = 1$ ,  $n = 2$ ,  $m = 1$ , the 2nd-order law holds, at 160°, over the 1st 334 sec. of the reaction up to  $x = 0.9400$  when the esterification predominates, with  $k_1 = 0.00500$  (corr. to sec.) falling to 0.00542 between  $x = 0.010$  and 1.00, then condensation becomes significant. The constancy of  $k_1$  over the 1st period indicates that esterification is much faster than the condensation, and is essentially complete before condensation develops significantly. However, some amt. of I escapes the esterification, e.g., at the end of the 1st 334 sec.,  $P = 7\%$ , falling during the 2nd stage (condensation) to 3.4% at the end of 2400 sec.; during that interval,  $C = F - N$  increases from 1.7 to 0.15%. At 150°,  $k_1 = 0.00395$ , and at 140°,  $k_1 = 0.00271$ ; the mean 10° temp. coeff. is 1.457. With this value,  $k_1$  at 180° was calcd. to 0.01222, in fair agreement with the exptl.  $k_1 = 0.01237$ . With  $a = 0.667$ ,  $b = 1.333$ , at 160°,  $k_1 = 0.00581$  (over 275 sec., up to  $x = 0.908$ ), i.e. practically identical with the value detd. for  $a = b = 1$ . Consequently, the two primary OH groups of II are equiv. A very close value of  $k_1 = 0.00576$  was found with a mixt.  $a = 0.8$ ,  $b = 1.2$ . The activation energy  $E_a$  is calcd. to be 13735 cal./mole. In a mixt.  $a = 0.5$ ,  $b = 1.5$ , at 160°,  $k_1$  remains fairly const. over 360 sec. ( $x = 0.816$ ) = 0.00570, but then increases markedly in the time interval 480-720 sec. ( $x = 0.894 - 0.994$ ). On the assumption that this 2nd time interval corresponds mainly to formation of  $\beta$ -esters (esterification of the secondary OH group of II), i.e.  $n = 1$ ,  $m = 0.333$ , the 2nd-order rate const.,  $k_2$ , of that  $\beta$ -esterification, at 160°, is calcd. to be 0.000455, practically const. between 16.5 and 23 min. ( $x = 1.0278 - 1.06662$ ), and, for the secondary OH,  $x_1 = x - 1 = 0.0278$  to 0.0662. Esterification in the  $\beta$  position is thus considerably slower than in the  $\alpha$  position and proceeds only to a limited extent. Detns. of the OH no. show absence of dehydration of II during the esterification stage of the process. N. Thon

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SHIMIZU, T. 11.

Esters

Kinetics of the formation of acid esters in the interaction of Phthalic anhydride with glycol. Zhur. prikl. khim. 31, No. 1, 1978.

MONTHLY LIST OF NEWLY ACQUIRED. Library of Congress, August 1952. UNCLASSIFIED.

*Organic Chemistry - 10*

Kinetics of the formation of acid esters in the reaction of phthalic anhydride with glycol. H. E. K. Shkol'nikov (Chelyabinsk Lacquer-Paint Plant). *Zhur. Priklad. Khim.* (J. Applied Chem.) 25, 70-71 (1952); cf. C.A. 45, 7008c. The formation of acid phthalates from  $\alpha$ -C<sub>6</sub>H<sub>4</sub>(CO)<sub>2</sub>O and (CH<sub>2</sub>OH)<sub>2</sub> is a bimol. reaction. Both HO groups of the glycol are equiv. as to reactivity. The rate const. is 0.001054 (time in sec.) at 140°, 0.005895 at 150°, and 0.008572 at 160°. The activation energy is 13,240 ± 240 cal./mole. No dehydration of HO groups was observed.

$\alpha$ -C<sub>6</sub>H<sub>4</sub>(CO)<sub>2</sub>O does not react completely and can always be detected in the final products. G. M. Kosolapoff

Shkol'man, E.E.

✓ Kinetics of the formation of polyester resins. III. The mechanism of the first stage of reaction of phthalic anhydride with polyalcohols (glycol and glycerol). I. I. Zeldler and E. E. Shkol'man. *J. Appl. Chem. U.S.S.R.* 26: 373-81 (1953) (Engl. translation).—See C.A. 48, 7687a.

H. L. H.

SHKOL'MAN, E. E.

Kinetics of the formation of polyester resins. III. The mechanism of the first stage of reaction of phthalic anhydride with poly-alcohols (glycol and glycerol). I. I. Zeldler and E. E. Shkol'man. *Zhur. Priklad. Khim.* 26, 410-19 (1953); *Chem. Abstr.* 47, 2704k. — Heating a 2:1 molar mixt. of  $\alpha$ -C<sub>6</sub>H<sub>4</sub>(CO)<sub>2</sub>O (I) and (CH<sub>2</sub>OH)<sub>2</sub> 5-10 min. to 160-260° completes the 1st stage of the reaction, and pptn. of the product from Me<sub>2</sub>CO with H<sub>2</sub>O gives (CH<sub>2</sub>OCC<sub>6</sub>H<sub>4</sub>CO<sub>2</sub>H-*o*) (II), m. 157-7.5°, soly. in H<sub>2</sub>O 0.0533 g./100 ml. at 22°. An equimolar mixt. of reagents similarly gave *o*-HOCH<sub>2</sub>CH<sub>2</sub>OCC<sub>6</sub>H<sub>4</sub>CO<sub>2</sub>H (III), m. 115.3° (from EtOAc), soly. in H<sub>2</sub>O 0.002 g./100 ml. at 22°. Heating II in a sealed vessel to 185° leads to progressive decompn. with elimination of I, along with polyesterification, as shown by a rise of total acidity and a decline of free acid based on alc. KOH titration. At 185° the former rises rapidly in 9 min., then slowly declines. At higher temps. the decompn. is more intensive (temps. up to 235° were examd.). Heating III similarly led largely to polyesterification with little ester destruction. It is believed that the thermal reactions of II and III are reversible, involving II, III, I, and the glycol. It was impossible to isolate in the pure state the primary reaction products of glycerol with I. The crude products from the 1st stage of esterification with various reagent proportions were subjected to thermal treatment. Generally thermal destruction is greater with the higher concns. of di- and triesters of glycerol. The destruction in this case is also reversible. The acid esters of glycol or glycerol can exist at elevated temp. only in the presence of equil. amts. of substances with free HO and CO<sub>2</sub>H groups. G. M. K.

SHKOL'MAN, E.E.

3

U S S R .

✓ The kinetics of the formation of polyester resins. IV. Kinetics of the reaction of polyesterification of acid esters of glycerol and phthalic acid. E. E. Shkol'man and I. I. Zeldler. *J. Appl. Chem. U.S.S.R.* 26, 689-94 (1963) (Engl. translation).—See *C.A.* 47, 11918c. V. Kinetics of the reaction of polyesterification of acid esters of glycerol and phthalic acid. I. I. Zeldler and E. E. Shkol'man. *Ibid.* 703-9.—See *C.A.* 47, 11918c. VI. Kinetics of the reaction of polyesterification of acid esters of ethylene glycol and phthalic acid. E. E. Shkol'man and I. I. Zeldler. *Ibid.* 1147-55.—See *C.A.* 48, 8001c. H. L. H.

SHKOL'MAN, Ye.Ye.; ZEYDLER, I.I.

Kinetics of the reaction of polyetherification of acidic esters of glycerin and phthalic acid. Zhur.prikl.khim. 26 no.7:736-742 J1 '53. (MLBA 6:7)

1. Tsentral'naya laboratoriya Chelyabinskogo lakekrasechnogo zavoda.  
(Etherification) (Glycerin) (Phthalic acid)  
(CA 47 no.22:11918 '53)

3



ZEIDLER, I.I.; SEKOL'MAN, B.E.

Kinetics of the reaction of polyesterification of di-ethers of glycerin and  
phthalic acid. Zhur.pril.khim. 26 no.8:840-847 Aug '53. (MLA 6:8)

1. Tsentral'naya laboratoriya Gaspabinskogo lakokrasochnogo zavoda.  
(Esterification) (Ethers)

SHKOL'MAN, E.E.

USSR :

✓Secondary anhydride formation in the reaction of phthalic  
anhydride with polyalcohols. E. E. Shkol'man and N. M.  
Voroshilova. *J. Appl. Chem.* 1953, 6, 225-226 (1953)  
(Engl. translation).—See C.A. 48, 12108a. H. L. H.

SHKOL'MAN, Ye.Ye.; VOROSHILOVA, N.M.

Secondary dehydration during the interaction of phthalic anhydride with polyatomic alcohols. Zhur.prikl.khim. 26 no.9:969-975 S '53. (MLBA 6:10)

1. TSentral'naya laboratoriya Chelyabinskogo lakokrasochnogo zavoda.  
(Dehydration (Chemistry)) (Phthalic anhydride) (Alcohols)  
(CA 47 no.22:12308 '53)

SHKOLMAN, I. I.

Chemical Abstracts  
Vol. 48 No. 5  
Mar. 10, 1954  
Synthetic Resins and Plastics

Kinetics of the formation of polyester resins. VI. Kinetics of the reaction of polyesterification of acid esters of ethylene glycol and phthalic acid. *I. I. Shkolman and I. I. Zeldner (Vaguer Plant, Chelyabinsk), Zhur. Priklad. Khim.* 26, 1205-12 (1953); cf. *ibid.* 410; *C.A.* 47, 11918c. The polyesterification of acid esters of ethylene glycol and phthalic acid is a bimol. reaction. The rate constant at 150° is 0.00294, at 160° 0.00404, and at 170° 0.00754. Activation energy is 17,500 cal./mole. The rate constants vary with different proportions of reagents (above values are given for equimolar mixts.). Along with polyesterification, there proceeds a competing formation of simple esters. As the amt. of glycol in the mixt. is reduced, the conditions improve for reversal of the polyesterification reaction, which leads to increasing amts. of phthalic anhydride in the mixt.

G. M. Kosolapoff

MF  
7-27-54

Shkol'man, E. E.

Mechanism of alcoholysis of vegetable oils. E. E. Shkol'man, I. I. Zetler, and N. M. Voroshilova (Lacquer and Paint Plant, Chelyabinsk). *Zhur. Priklad. Khim.* 28, 1190-8 (1955).—Glycerolysis of linseed and cottonseed oils and of rosin was examined, both in open vessels and under inert atm. The normal glycerolysis process is complicated by side reactions which decrease the yield of monoglyceride and lower its I.O. no. These reactions are aided by high temp., time, the use of lightly polymerized oils, and losses of free glycerol. The main side reactions are: reversal of glycerolysis and formation of polyglycerols. Glycerolysis should be conducted in an app. with a reflux condenser to prevent the loss of glycerol. Any means designed to lower the operating temp. and reduce the duration of reaction serve to improve the yield of monoglycerides. A long reaction time also aids polymerization of the oils. G. M. Kosolapoff

7

SHKOL'MAN, E.E.

✓ Mechanism of thermal decomposition of the products of reaction of phthalic anhydride with polyvalent alcohols. E. E. Shkol'man and N. M. Voroshilova (Paint and Lacquer Plant, Chelyabinsk). *Zhur. Priklad. Khim.* 29, 1122-7 (1956).—The thermal treatment of ethylene glycol mono- and diphtalates up to 210° was followed by the detn. of acidity, individual components, and HO groups. The results show no acidolysis during the process applied to the diphtalate. The possibility of thermal decompn. of acid phthalates into phthalic acid and dienol esters is shown to be untenable. The thermal decompn. of glycol acid phthalate and glycerol acid phthalate occurs by cleavage of  $o\text{-C}_6\text{H}_4\text{-(CO)}_2\text{O}$  with liberation of the HO groups previously bound in ester links. Polyester formation from glycol diphtalate is the result of polyesterification of such reaction products as glycol monophthalate. Decompn. of alkyds modified by vegetable oils apparently follows the same scheme.

G. M. Kosolapoff

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SHKOLMAN, E. E.

Mechanism of alcoholysis of vegetable oils. II. I. I.

3

*max*

Zeldler, E. E. Shkol'man, and N. M. Voroshilova (Paint-Lacquer Plant, Chelyabinsk): *Zhur. Priklad. Khim.* 29, 1275-82(1956); cf. *C.A.* 50, 3776c.—Expts. with various proportions of glycerol and linseed oil under  $N_2$  at  $240^\circ$  in presence of litharge showed that the extent of glycerolysis as detd. by hydroxyl no. of the product and its content of monoglycerides depends on the proportions of the reactants especially up to a 3:1 proportion. Fractionation of the products indicates the probable formation of derivs. of polyglycerol in the reaction. The actually found hydroxyl no. of the reaction product tends to be below that calcd. from monoglyceride concn.; this is explainable on the basis of side reactions which take place besides the alcoholysis reaction. III. E. E. Shkol'man and N. M. Voroshilova. *Ibid.* 1425-31.—Alcoholysis of cottonseed oil with pentaerythritol is accompanied by side reactions connected with dehydration and polymerization of the unsatd. acyl groups. This results in a lowering of the HO no. of the product; low temp. and shorter duration decrease this effect.

G. M. Kosolapoff

SHKOL'MAN, Ye.Ye.; VOROSHILOVA, N.M.

Alcoholysis of vegetable oils. Zhur.prikl.khim. 29 no.9:  
1425-1431 S '56. (MIRA 9:11)

1. TSentral'naya laboratoriya Chelyabinskogo lakokrasochnogo  
zavod.

(Alcoholysis) (Oils and fats)



SHKOL'MAN, Ye. Ye., Cand of Chem Sci -- (diss) "The kinetics of the reaction of the reciprocal action of phthalic anhydride with glycerin and glycol." Moscow, 1957, 11 pp (Institute of Organic Chemistry im N. D. Zelinskiy), 200 copies (KL, 35-57, 106)

*SHKOL'MAN, Ye. Ye.*

SHKOL'MAN, Ye. Ye.; VOROSHILOVA, N.M.

Mechanism of thermal decomposition of the interaction products  
between phthalic anhydride and polyatomic alcohols. Zhur.prikl.  
khim. 29 no.7:1122-1127 J1 '57. (MIRA 10:10)

1. Tsentral'naya laboratoriya Chelyabinskogo lakokrasochnogo  
zavoda.

(Thermochemistry) (Phthalic anhydride) (Alcohol)

*Shkol'man v. YE*

Distr: 424j

Analysis of phthalic anhydride. B. B. Shkol'man and N. M. Voroshilova (Lac-Dye Plant, Chelyabinsk). *Zhur. Priklad. Khim.* 30, 1710-19 (1957). Phthalic anhydride (I) is methylated quantitatively with MeOH which has been dried with Mg methyllate and distd. A weighed sample,  $g_1$ , of I is dissolved in hot, freshly distd. water with  $v_1$  ml. of 0.5N NaOH. Another sample  $g_2$  dissolved in dry MeOH is similarly titrated with  $v_2$  of the same alkali against phenolphthalein.  $CO_2$  in the solns. and atm. is eliminated. The % of I is given by  $x = (v_1/g_1) - (v_2/g_2) 0.07406 \times 100$ , where 0.07406 is the amt. of I corresponding to 1 ml. of 0.5N NaOH assuming 100% methylation. The low (99.94%) values obtained by Lukashevich (C.A. 26, 1877) is shown experimentally to be due to the presence of water in the MeOH used.

I. Bencowitz

SHKOL'MAN, Ye.Ye.; VOROSHILOVA, N.M.

Vat residues in the production of phthalic anhydride. Zhur.  
~~prikl.khim.~~ 34 no.8:1861-1867 Ag '61. (MIRA 14:8)

1. Tsentral'naya zavodskaya laboratoriya Chelyabinskogo  
lakokrasochnogo zavoda.  
(Phthalic anhydride)

S/282/63/000/001/004/011

A059/A126

AUTHORS: Korablev, N.M., Voroshilova, N.M., Shkol'man, Ye.Ye.

TITLE: Dispersion of pigments for varnishes and paints in the binder with the aid of ultrasound

PERIODICAL: Referativnyy zhurnal, otdel'nyy vypusk, 47. Khimicheskoye i kholodil'noye mashinostroyeniye, no. 1, 1963, 7, abstract 1.47.44 (Lakokrash. materialy i ikh primeneniye, no. 4, 1962, 56 - 59)

TEXT: The dispersion process of zinc-white paints in the binder is examined with different paint concentrations using magnetostrictive and piezoelectric converters as the generator of ultrasound. It has been established that, instead of rubbing zinc-white paints in ball and color mills, their pastes can be treated with ultrasound having a frequency of 18 kc and an intensity of 3 w/cm<sup>2</sup>. Enamels prepared with ultrasound and filtered show no qualitative difference as compared to enamels prepared under the usual operating conditions. There are 3 figures and 4 references.

[Abstracter's note: Complete translation]

Card 1/1

SHKOL'NIK, A., inzhener.

Following example of progressive enterprises. Prom.koop.no.2:31  
F '56. (MLRA 9:7)

1.Aktyubinskiy oblpromsovet.  
(Aktyubinsk--Industries)

SHKOL'NIK, A.A. (Moskva)

Strangulated hernia. Fel'd.1 akush. no.3:18-24 Mr '55. (MLRA 8:5)

(HERNIA,

strangulated, management)

SHKOL'NIK, A. G.

SHKOL'NIK, A.G.

[The problem of dividing the circle] Zadacha deleniia kruga.

Uchpedgiz, Moskva, 1948. 71 p.

(MLA 7:5)

(Geometry, Plane)



Škol'nik, A. G.

Škol'nik, A. G. Linear inequalities. Doklady Akad. Nauk  
SSSR (N.S.) 70, 189-192 (1950). (Russian).

The author gives some theorems on the consistency and independence of a system of linear inequalities, and on the boundedness of the solution set, in terms of the signs of the minors of the matrix of coefficients and free terms. The theorems are equivalent to the criteria of Motzkin [Dissertation, Basel, 1933, Jerusalem, 1936, pp. 49-50] for homogeneous systems.

J. M. Danskin.

Source: Mathematical Reviews,

Vol 13 No.10

Smw  
HAK

SHKOL'NIK, Adol'f Grigor'yevich; LEPESHKINA, N.I., red.; KOVALENKO,  
V.L., tekhn. red.

[Problem of the division of the circle; textbook for teachers]  
Zadacha deleniia kruga; posobie dlia uchitelei. Izd.3. Mo-  
skva, Gos. uchebno-pedagog.izd-vo M-va prosv. RSFSR, 1961. 72 p.  
(MIRA 15:4)

(Circle)

(Equations, Binomial)

SHKOL'NIK, Adol'f Grigor'yevich; DOLGOPOLOV, V.G., red.; KARPOVA,  
I.V., tekhn. red.

[Differential equations] Differentsial'nye uravneniia;  
uchebnoe posobie dlia fiziko-matematicheskikh fakul'tetov  
pedagogicheskikh institutov. Moskva, Uchpedgiz, 1963. 197 p.  
(MIRA 16:9)

(Differential equations)

S/058/62/000/006/032/136  
A061/A101

AUTHORS: Purtseladze, I. M., Khitarishvili, L. S., ~~Oniskovani, R. I.~~,  
Shkol'nik, A. L.

TITLE: A study of the optical properties of molybdenum trioxide  $\text{MoO}_3$

PERIODICAL: Referativnyy zhurnal, Fizika, no. 6, 1962, 32, abstract 6V214  
("Tr. Tbilissk. un-ta", 1960, v. 86, 439 - 448, English summary)

TEXT: A quantitative investigation has been conducted on absorption and reflection spectra of single crystals and polycrystalline  $\text{MoO}_3$  films at temperatures between 90 and 465°K. The spectral coefficient of  $\text{MoO}_3$  self-absorption displays a steep rise at  $\sim 350 \text{ m}\mu$ . This absorption edge is displaced, in films, toward the longwave side as compared with single crystals, and shifts toward the side of long waves during heating. In crystals subjected to X- and  $\gamma$ -irradiation and neutron bombardment in the reactor, the spectrum displays an additional absorption band at  $350 \text{ m}\mu$ , which is unstable and decays under the action of light, and also a stable band at  $\sim 900 \text{ m}\mu$  (with neutron bombardment). The  $350\text{-m}\mu$  band refers to a center consisting of an oxygen vacancy by which an electron has been

Card 1/2

S/058/62/000/006/032/136

A061/A101

A study of the...

trapped, while the 900-mu band is due to large aggregates of lattice imperfections.

[Abstracter's note: Complete translation]

Card 2/2

S/058/62/000/OC6/093/136  
A057/A101

AUTHORS: Chikovani, R. I., Shkol'nik, A. L., Purtseladze, I. M.,  
Khitarishvili, L. S.

TITLE: On the photoconductivity of single crystals of molybdenum  
trioxide  $\text{MoO}_3$

PERIODICAL: Referativnyy zhurnal, Fizika, no. 6, 1962, 38, abstract 6E306  
("Tr. Tbilissk. un-ta", 1960, 86, 449 - 458; English summary)

TEXT: The photoconductivity of  $\text{MoO}_3$  single crystals, obtained by a  
single, or multiple distillation of  $\text{MoO}_3$  powder, and also of films of  
this compound, obtained by evaporation in vacuum on a quartz backing, was  
investigated. The experiments were carried out with non-irradiated  
crystals, and also with crystals irradiated by X-rays, gamma-rays, and  
neutrons. The region of photosensitivity of the crystals lies below  $360\text{ m}\mu$   
and coincides with the region of strong absorption. The photosensitivity  
has a maximum at room temperature and is at the maximum in the average  
20 - 30%. At temperatures above  $70^\circ\text{C}$  the photosensitivity disappears

Card 1/2

On the photosensitivity of ...

S/058/62/000/006/093/136  
A057/A101

irreversibly. With time, a recovery of the photosensitivity takes place, which can be accelerated by annealing. Irradiation of the crystals with X-rays does not change their photosensitivity. Irradiation with gamma-rays effects a small increase of photosensitivity, and irradiation by neutrons - a loss. The photosensitivity is absent in thin films. The obtained results are explained by the presence of oxygen vacancies in the crystals, which are able to capture one or two electrons.

P. Konorov

[Abstracter's note: Complete translation]

Card 2/2

L 18387-63 EWT(1)/EWP(q)/EWT(m)/BDS AFFTC/ASD/LJP(C)/SSD JD  
 ACCESSION NR: AP3003867 S/0181/63/005/007/1769/1775

AUTHORS: Mirtskhulava, I. A.; Chikovani, R. I.; Shkol'nik, A. L.

TITLE: Determining the parameters of local levels by induced infrared impurity photoconductivity in single crystals of CdS

↑ SOURCE: Fizika tverdogo tela, v. 5, no. 7, 1963, 1769-1775

TOPIC TAGS: impurity conductivity, photoconductivity, infrared, Cd, S, induced conductivity, hole trapping, recombination, level, absorption band

ABSTRACT: The authors investigate in single crystals of unalloyed CdS the induced infrared impurity photoconductivity from local levels arising from preliminary excitation of the crystal by light, from deeper local levels, or from the absorption band itself. They studied the kinetics of this photoconductivity for various ratios of number of electrons at trapping levels to number of sites (or holes) at recombination levels. They obtained experimental results by the method proposed by I. A. Mirtskhulava (FTT, 5, 1514, 1963) which permits one to determine the basic parameters in CdS. Their results were  $(1.5-3) \cdot 10^{-16} \text{ cm}^2$  for capture cross section of a photon by a center,  $(2-5) \cdot 10^{10} \text{ cm}^{-3}$  for concentration

Card 1/2



L 18387-63

ACCESSION NR: AP3003867

of electrons and  $(3-8) \cdot 10^{10} \text{ cm}^{-3}$  for concentration of holes at the local levels, and  $(2-4) \cdot 10^{-12} \text{ cm}^3/\text{sec}$  and  $(0.8-2) \cdot 10^{-11} \text{ cm}^3/\text{sec}$  for capture cross sections of electrons from the conduction band at the deep levels and at the holes respectively. The authors conclude that their technique for determining parameters will be very effective in special alloys of crystals, permitting the determination of the basic characteristics of the parameters of previously introduced impurities, and then the investigation of the crystals by induced infrared impurity photoconductivity. Orig. art. has: 7 figures and 8 formulas.

ASSOCIATION: Tbilisskiy gosudarstvennyy universitet (Tbilisi State University)

SUBMITTED: 18Dec62

DATE ACQ: 15Aug63

ENCL: 00

SUB CODE: PH

NO REF SOV: 012

OTHER: 005

Card 2/2

DZHANALIDZE, R.B., PURTSELADZE, I.M.; KHITARISHVILI, L.S.; CHIKOVANI, R.I.;  
SHKOL'NIK, A.L.

Some optical and photoelectric properties of  $\text{MoC}_2$ . Fiz. tver.  
tela 7 no.8:2573-2575 Ag '65. (MIRA 18:9)

1. Tbilisskiy gosudarstvennyy universitet.

L 11984-65 EWI(m)/EWP(t)/EWP(t) IJP(c)/AFWL/BSD/SSD/AS(mp)-2/ESD(t) JD  
 S/0181/64/006/010/2945/2952  
 ACCESSION NR: AP4046602

AUTHORS: Mirtskhulava, I. A.; Chikovani, R. I.; Shkol'nik, A. L.;  
Dzhakhutashvili, T. V.

TITLE: Determination of the local level parameters in doped ZnS single crystals B

SOURCE: Fizika tverdogo tela, v. 6, no. 10, 1964, 2945-2952

TOPIC TAGS: zinc sulfide, single crystal, local level, photoconductivity, thermally stimulated conductivity, impurity conductivity

ABSTRACT: The reason for the research was that the photoelectric properties of single crystals of ZnS have not been extensively investigated. There are practically no literature data on its impurity photoconductivity (particularly in the infrared region), and the induced photoconductivity was not studied at all. The authors therefore investigated the induced impurity photoconductivity in

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L 11984-65

ACCESSION NR: AP4046602

0

ZnS single crystals doped with Ag, Cu and Cl. The thermally stimulated conductivity in these substances was also investigated. The apparatus used was described earlier (FTT v. 5, 1769, 1963). The samples were placed in a metallic cryostat in which the measurements could be made in the temperature range from -180 to +160C and in vacuum of  $\sim 3 \times 10^{-6}$  mm Hg. The samples were heated with an external oven, at a rate 0.2 deg/sec. The single crystals measured  $5 \times 2 \times 0.7$  mm, and were either not annealed or annealed in vacuum at 600C for 4 hours. The peaks on the thermally-stimulated-conductivity curves were identified by means of a method of thermo-optical sounding, which is first proposed in this article. This method has established that the same centers appear both in the impurity photoconductivity and in the thermally stimulated photoconductivity. The results have shown that the population of the levels with the aid of charge exchange by excitation from deep local levels (attributed to the copper impurity in ZnS) is more effective than excitation from the intrinsic absorption band. The kinetics of the induced photoconductivity was investigated with the crystals excited with light

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ACCESSION NR: AP4046602

of suitable spectral composition. The energy of thermal ionization of the centers was investigated from the thermally stimulated conductivity. The thermo-optical sounding method has made it possible to identify some of the levels responsible for the peaks in the curves of thermally stimulated conductivity and the spectral distribution of the photoconductivity. The main parameters of the local centers responsible for the induced photoconductivity at different temperatures are calculated, and the ratio of the optical and thermal energies of activation of the impurity centers is estimated. "In conclusion, the authors are deeply grateful to A. A. Sisoyev for supplying the samples." Orig. art. has: 7 figures, 1 formula, and 3 tables.

ASSOCIATION: Tbilisskiy gosudarstvennyy universitet (Tbilisi State University)

SUBMITTED: 11Mar64

ENCL: 00

SUB CODE: SS, EM

NR REF SOV: 008

OTHER: 008

Card 3/3

1 49044-55 EW1(1)/EW2(2)/EEC(4)/EWP(5)/EWP(2) Pz-5 IJP(c) AT/ID  
 s/0181/65/007/003/0841/0845  
 ACCESSION NR: AP5006892

AUTHOR: Dobrego, V. P.; Ryvkin, S. M.; Shkol'nik, A. L.

TITLE: Interimpurity recombination in gallium arsenide

SOURCE: Fizika tverdogo tela, v. 7, no. 3, 1965, 841-845

TOPIC TAGS: photoconductivity, recombination, gallium arsenide, low temperature research, lux ampere characteristic, interimpurity recombination

ABSTRACT: This is a continuation of earlier work (FTT v. 6, 503, 1964) on the jump photoconductivity connected with the interimpurity recombination in germanium and silicon. In the present paper the authors present data obtained by investigating at 2--145K this phenomenon in p-type gallium arsenide, which has good photoconductivity and jump dark conductivity at sufficiently low temperature. The carrier density at room temperature was  $(4--6) \times 10^{16} \text{ cm}^{-3}$ , with the concentration of the shallow acceptors greatly exceeding this value, so that the degree of compensation of the shallow acceptor level exceeded 0.5. The experiments have shown that jump photoconductivity and interimpurity recombination take place in gallium

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ACCESSION NR: AP5006892

arsenide of p-type in the temperature range 2--4.2K and that impurity recombination is a major factor at higher temperatures under ordinary photoconductivity conditions. The sublinear lux-ampere characteristics and the non-exponential decrease in photoconductivity at low excitation level are attributed to the major role played by the interimpurity recombination over the entire range of low temperatures. "The authors thank T. V. Mashovetz and N. A. Vitovskiy for supplying the samples and A. A. Grinberg for discussion of the results." Orig. art. has: 6 figures.

ASSOCIATION: Fiziko-tehnicheskiy institut im. A. F. Ioffe AN SSSR, Leningrad  
(Physicotechnical Institute); Tbilisskiy gosudarstvennyy universitet (Tbilisi  
State University)

SUBMITTED: 29Sep64

ENCL: 00

SUB CODE: SS, IC

NR REF SOV: 004

OTHER: 000

Card 2/2 CC

L 8589-66

EWT(m)/EWG(m)/T/EWP(b)/EWA(m)-2/EWP(t)/EWT(1) IJP(c) AT/WH/JD/GG/RD

ACCESSION NR: AP5019900

UR/0181/65/007/008/2573/2575

AUTHOR: <sup>44, 55</sup> Dzhanelidze, R. B.; <sup>44, 55</sup> Purtseladze, I. M.; <sup>44, 55</sup> Khitarishvili, L. S.; <sup>44, 55</sup> Chikovani, R. I.; <sup>44, 55</sup> Shkol'nik, A. L.

TITLE: Certain optical and photoelectric properties of molybdenum trioxide

SOURCE: Fizika tverdogo tela, v. 7, no. 8, 1965, 2573-2575

TOPIC TAGS: molybdenum compound, light absorption, absorption edge, electron capture, crystal lattice vacancy, photoelectric property

ABSTRACT: In view of the scarcity and contradictory nature of data on MoO<sub>3</sub>, due for the most part to the difficulty of obtaining sufficiently large samples, the authors have produced large samples ((15--50) x (1--6) x (0.05--0.5) mm) of MoO<sub>3</sub> single crystals, whose optical-absorption spectra were investigated with allowance for reflection. The crystals exhibited strong absorption (350 nm and shorter wavelengths). The absorption edge shifted somewhat with increasing temperature toward the long-wave region. The results are shown in Fig. 1 of the Enclosure and are interpreted from the point of view of the level scheme of the electronic transitions shown in Fig. 2 of the Enclosure. In particular, the peaks near 350 and 900 nm, which can be appreciably strengthened or reduced by different treatments, are attributed to the presence of oxygen vacancies, capable of capturing one or two

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L 8589-66

ACCESSION NR: AP5019900

electrons. "The authors thank I. A. Mirtskhylava for interest in the work." Orig.  
art. has: 2 figures. 44.55 44.55 6

ASSOCIATION: Tbilisskiy gosudarstvennyy universitet (Tbilisi State University)

SUBMITTED: 13Apr65

ENCL: 01

SUB CODE: SS

NR REF SOV: 005

OTHER: 001

Card 2/3

L 8589-66

ACCESSION NR: AP5019900

ENCLOSURE: 01

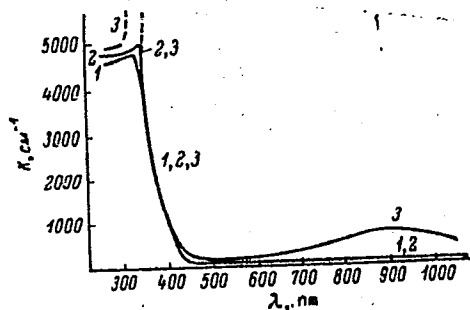


Fig. 1. Absorption spectra of single-crystal  $\text{MoO}_3$ .

1 - Before irradiation, 2 - after x-irradiation, 3 - after neutron bombardment

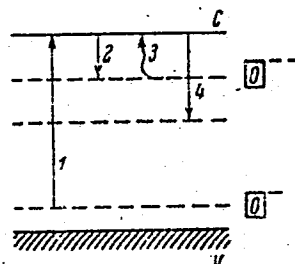


Fig. 2. Scheme of electronic transitions

jw

Card 3/3

L 10303-66 EWT(1)/EWT(m)/I/EMP(t)/EMP(b)/EWA(c) IJP(c) JD/JG

ACCESSION NR: AP5024574

UR/0251/65/039/002/0295/0297

<sup>44, 55</sup>  
AUTHOR: A.L. Shkol'nik

<sup>67</sup>  
TITLE: Photosensitivity of Mo O<sub>3</sub> single crystals <sup>16</sup>

SOURCE: AN GruzSSR. Soobshcheniya, v. 39, no. 2, 1965, 295 - 297

TOPIC TAGS: Mo O<sub>3</sub>, crystal, photosensitivity, irradiation,  
gamma radiation detection, neutron flux detection

<sup>21, 44, 55</sup> <sup>21, 44, 55</sup>  
ABSTRACT: The effects of radiations upon the photosensitivity of molybdenum trioxide single crystals are investigated, and possible causes proposed. Photosensitivity of single crystals of Mo O<sub>3</sub> was measured over a temperature range of 220-400 °K., before and after irradiation with: (a) - X-rays, using RUP-200-20-4 equipment; (b) - gamma rays, using a Radium/Beryllium source, and (c) - neutrons, in an atomic reactor. The methods of measurement were those outlined earlier by P.I. Chikovani et al. (Trudy TGU, v. 89, 1960, 449). Radiation (a) had little effect on the photosensitivity; (b) increased the photosensitivity substantially; (c) - resulted in a complete loss of photosensitivity and in an increase of the electrical resistance. These effects are then discussed in relation to the effects of radiations

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L 10303-66

ACCESSION NR: Ap5024574

(a), (b) and (c) on Mo O<sub>3</sub> light absorption spectrum, reported previously by I.M. Purtseladze et al. (Trudy TGU, vol. 86, 1960, 439). The high spectral absorption peak at 350 mμ, after irradiation (b), points to oxygen atom vacancy capture of one electron, resulting in photoactive centers. This explains the enhanced photosensitivity due to gamma irradiation. The 900 mμ heavy absorption peak due to (c) is ascribed to the generation of insensitive structural defects (polycrystals and films), thus explaining the loss of photosensitivity by neutron irradiation. It is noted that Mo O<sub>3</sub> crystals can be utilized for radiation detection. The orig. art. has: 1 figure.

ASSOCIATION: Tbilisskiy gosudarstvenny universitet (Tbilissy University, GruzSSR).

SUBMITTED: 22 Jan 65

ENCL: 00

SUB CODE: 20

NO REF SOV: 002

OTHER: 000

CC

Card 2/2

MIRTSKHULAVA, I.A.; CHIKOVANI, R.I.; SHKOL'NIK, A.L.; DZHAKHUTASHVILI, T.V.

Induced photoconductivity in single crystals of zinc sulfide  
with impurities. Soob. AN Gruz. SSR 40 no.1:55-62 0 '65.  
(MIRA 18:12)

1. Tbilisskiy gosudarstvennyy universitet. Submitted January  
14, 1965.

REZVOV, K.M., kand.tekhn.nauk; PAVLYUCHUK, A.I.; VOLOGZHANINOV, N.I.;  
SHKOL'NIK, A.M.; PANIN, G.I.; YAKOVLEV, I.S.

Plastic carburetor floats. Avt.prom. no.2:26-27 F '60.  
(MIRA 13:5)

1. Filial Gosudarstvennogo soyuznogo ordena Trudovogo Krasnogo  
Znameni nauchno-issledovatel'skogo avtomobil'nogo i avtomotornogo  
instituta po toplivnoy apparature.  
(Automobiles--Engines--Carburetors)

S/113/60/000/005/004/004  
D264/D301

AUTHORS: Rezvov, K.M., Pavlyuchuk, A.I., Candidates of Techni-  
cal Sciences, Panin, G.I., Vologzhaninov, N.I.,  
Shkol'nik, A.M., Yakovlev, I.S. and Volkov, L.I.

TITLE: Thermal high frequency welding of plastic carburettor  
floats

PERIODICAL: Avtomobil'naya promyshlennost', no. 5, 1960, 41-43

TEXT: TsNITA has developed a device for the thermal high-frequency welding of carburettor floats made of polycaprolactam. Plain thermal welding was tried but failed to give a reliable hermetic seal. Gluing gave a good seal but required a prolonged drying time. The device (Fig. 3) consists of an ЛГА-1 (LGD-1) high-frequency generator and a semi-automatic welding machine. The use of 2 generator tubes gives a power of 1 kw and a working frequency of 25 Mc. Power from the electric motor 4 is transmitted via a gear train and screw gear to the coaxially mounted cams 5 and 6. The spindle 1 derives its reciprocation from cam 6, while cam 5 serves to trim off the

Card 1/3

Thermal high frequency welding...

S/113/60/000/005/004/004  
D264/D301

outer beading and eject the welded float from the bottom punch 3. Welding is regulated by adjusting the gap between the top and bottom punches 2 and 3 (by adjusting the carriage 7) and by varying the feed-back inductance. The punch faces must be positioned in parallel, with a divergence of not more than 0.02-0.03 mm. The punches are also set to ensure the formation of a slight beading of the seam inside the float, since this makes for greater hermeticity. Welding time varies from 5 to 12 seconds, depending on the float size. The method is recommended for introduction in Soviet automobile plants. There are 3 diagrams.

ASSOCIATION: Tsentral'nyy nauchno-issledovatel'skiy i konstruktor-skiy institut toplivnoy apparatury avtotraktornykh i statsionarnykh dvigateley (Central Scientific Research and Design Institute for the Fuel Apparatus of Automotive and Stationary Engines)

Card 2/3



KOMSKAYA, M.S. [Koms'ka, M.S.], kand. tekhn. nauk; OSOVSKAYA, I.V.  
[Osovs'ka, I.V.]; KHIMICHENKO, A.G. [Khimichenko, A.H.];  
SHKOL'NIK, A.Ya. [Shkol'nyk, H.IA.]

Possibility of using substitutes for Prosyanaya kaolin in  
the multicomponent composition for porcelain. Leh. prom.  
no.1:65-67 Ja-Mr '65.

(MIRA 18:4)

KOMSKAYA, M.S. [Koms'ka, M.S.], kand.tekhn.nauk; SHKOL'NIK, A.Ya.  
[Shkol'nyk, H.IA.]; SHPAK, N.A. [Shpak, N.P.]; YATSUNOVA, S.Ye.  
[Iatsunova, S.IU.]

Method for the regulation of the addition of electrolytes  
to porcelain slips. Leh.prom. no.1:63-66 Ja-Mr. '64.  
(MIRA 19:1)

SHKOL'NIK, A.Ye. (gorod Polyarnyy)

Heat-conducting canals built in rock. Vod. i san. tekhn.  
no.2:33 F '61. (MIRA 14:7)  
(Heating pipes)

SEKOL'NIK, B. I.

SEKOL'NIK, B. I.--"Materials on the Surgical Anatomy of the Intrahepatic Bile Passages." (Dissertation for Degree-s\*in Science and Engineering Defended by USSR Educational Institutions) Kiev Order of Labor Red Banner Med Inst imeni Academician A. A. Bogomolets, Chair of Operative Surgery and Topographic Anatomy, Kiev, 1955.\* Medical Sciences

SO: Knizhnaya Letopis' No. 37, 10 September 1955.

SHKOL'NIK, B.I., kand.med.nauk; KORNILOVA, S.M.

Combined use of paracervical anesthesia and local anesthesia in gynecological surgery. Ped., akush. i gin. 19 no.3:56-60 '57.

(MIRA 13:1)

1. Ginekologicheskoye otdeleniye (zav. - S.N. Kornilova) Zheleznodorozhnogo roditel'nogo doma Yugo-zapadnoy zheleznoy dorogi (glavnyy vrach - G.S. Stepankova).

(GENERATIVE ORGANS, FEMALE--SURGERY) (LOCAL ANESTHESIA)

SHKOL'NIK, B. I.

KUL'CHITSKIY, K.I., kandidat meditsinskikh nauk (Kiyev, ul. Gor'kogo  
d. 47/11); CHERNYSHENKO, L.V., kandidat meditsinskikh nauk;  
SHKOL'NIK, B.I., kandidat meditsinskikh nauk

Topography of the cystic artery [with summary in English, pp.157-158]  
Vest.khir. 78 no.6:34-37 Ja '57. (MLRA 10:8)

1. Iz kafedry operativnoy khirurgii i topograficheskoy anatomii  
(zav. - prof. S.T.Novitskiy) Kiyevskogo meditsinskogo instituta  
(GALL BLADDER, blood supply  
topography)

SHKOL'NIK, B.I., kand.med.nauk (Kiyev, Timofeyevskaya ul., d. 11/13,  
kv.25)

Some features of surgical anatomy of the common bile duct [with  
summary in English]. Vest.khir. 82 no.2:46-50 F '59.

(MIRA 12:2)

1. Iz kafedry operativnoy khirurgii i topograficheskoy anatomii  
(zav. - prof. S.T. Novitskiy) Kiyevskogo ordena Trudovogo Krasnogo  
Znameni meditsinskogo instituta imeni A.A. Bogomol'tsa.

(BILE DUCTS, COMMON, anat. & histol.  
surg. anat. (Rus))

TIMOSHENKO, Leonid Vasil'yevich, kand.med.nauk; SHKOL'NIK, Boris  
Iosifovich, kand.med.nauk; KALINICHENKO, T.Ya., red.; GITSHTSEYN,  
A.D. [Hitshtein, A.D.], tekhred.

[Women's diseases and how to prevent them] Zhinochi khvoroby  
i iak im zapobihy. Kyiv, Derzh.med.vyd-vo URSR, 1960. 37 p.  
(MIRA 14:1)

(WOMEN--DISEASES)



NIKOLAYEV, A.P., otv. red.; SHKOL'NIK, B.I., kand. med. nauk, red.;  
BAKSHEYEV, N.S., prof., red.; VINOGRADOVA, S.P., prof., red.;  
GRISHCHENKO, I.I., prof., red.; KORNILOVA, A.I., kand. med.  
nauk, red.; KONSTANTINOV, V.A., prof., red.; MEDYANIK, R.V.,  
red.; PAP, A.G., kand. med. nauk, red.; PETERBURGSKIY, F.Ye.,  
prof., red.; SAVITSKIY, V.N., prof., red.; STEPANKOVSKAYA,  
G.S., kand. med. nauk, red.; TIMOSHENKO, L.V., dots., red.;  
YANKELEVICH, Ye.Ya., prof., red.

[Transactions of the Third Congress of Obstetricians and  
Gynecologists of the Ukrainian S.S.R.] Trudy III s"ezda  
akusherov-ginekologov Ukrainskoi SSR. Kiev, Gosmedizdat,  
(MIRA 17:5)  
1962. 370 p.

1. S"yezd akusherov-ginekologov Ukrainskoy SSR. 3d, Kharkov,  
1961. 2. Deystvitel'nyy chlen AMN SSSR (for Nikolayev).

PAP, A.G., kand.med.nauk; SHKOL'NIK, B.I., kand.med.nauk

Prophylactic checkup of women. Zdorov'e 9 no.3:12-13 Mr '63.  
(MIRA 1685)

(WOMEN--HEALTH AND HYGIENE)

PAP, Aleksandr Germanovich; SHKOL'NIK, Boris Iosifovich;  
SOL'SKIY, Yakov Porfir'yevich; STEPANKOVSKAYA, G.K.,  
red.

[Hygiene of the woman] Gigiena zhenshchiny. Kiev,  
Zdorov'ia, 1964. 175 p. (MIRA 18:1)

L 36287-65

ACCESSION NR: AP5008162

S/0286/65/000/005/0039/0039

AUTHOR: Shkol'nik, B. Ya.

TITLE: An electronic commutator. Class 21, No. 168757

SOURCE: Byulleten' izobreteniy i tovarnykh znakov, no. 5, 1965, 39

TOPIC TAGS: commutator, diode reactance

ABSTRACT: This Author Certificate presents an electric commutator containing switching diodes in the bridge circuit and also passing transformers connected to this circuit (see Fig. 1 on the Enclosure). To reduce the level of switching interference, the source of the signals being switched is connected to the primary winding of the input transformer. One side of the secondary winding of this transformer is connected through a potentiometer and the other through the primary winding of the output transformer to one diagonal of the bridge circuit. The second diagonal of this bridge circuit is connected through a diode to the generator of the commutative pulses. Orig. art. has: 1 figure.

ASSOCIATION: none

SUBMITTED: 19Sep63

ENCL: 01

SUB CODE: EC

NO REF SOV: 000

OTHER: 000

Card 1/2

KERESELDZE, Sh.Ya., dots; KHUKHUNI, T.V., inzh.; SHKOL'NIK, E.B., inzh.

Investigating the performance of the automatic stabilizer of  
USG-12A tractors designed for steep slopes. Trakt. 1 sel'-  
khoz mash. no. 3:4-8 Mr '59. (MIRA 12:4)  
(Tractors)

SHKOL'NIK, E.V.

Hydraulic generators for Stalingrad Hydroelectric Power  
Station. Biul.tekh.-ekon.inform. no.10:41-44 ' 58.  
(MIRA 11:12)

(Stalingrad Hydroelectric Power Station)

SHKOL'NIK, E.V., inzh.; PINSKIY, G.B., inzh.

Segmentation of the stator cores of synchronous machinery. Vest.  
elektroprom. 32 no.8:67-69 Ag '61. (MIRA 14:8)  
(Electric machinery, Synchronous) (Cores (Electricity))

SHKOL'NIK, E.V.; PINSKIY, G.B.; NOVIKOV, A.F.

Experimental hydraulic generator at the Volga Hydroelectric Power Station "22d Congress of the CPSU). Biul.tekh.-ekon.inform.Gos.-nauch.-issl.inst.nauch.i tekh.inform. no.11:69-72 '62. (MIRA 15:11) (Volga Hydroelectric Power Station (22d Congress of the CPSU))



SHKOL'NIK, E.V., inzh.; PINSKIY, G.B., inzh.; NOVIKOV, A.F., inz.

Experimental hydrogenerator of the Volga Hydroelectric Power  
Station (22d Congress of the CPSU). Vest. elektroprom 34  
no.6:1-4 Je '63. (MIRA 16:7)

(Volga Hydroelectric Power Station (22d Congress of the CPSU)

SHKOL'NIK, G.

"Analytical Method of Determining the Location of an Airplane  
With Direction Finders," by Navigator G. Shkol'nik, Baku, Grazh-  
danskaya Aviatsiya, No 2, Feb 55, pp 21-22 ✓

An analytical method of determining the location of an airplane based  
on the intersection of the beams from two direction finders is presented.  
The method, formulas, and diagrams used in the solution of case problems  
are set forth.

SUM. I287

SHKOL'NIK, G., shturman.

How to determine the drift angle. Grazhd. av. 13 no.2:16 F '56.  
(MLRA 9;5)

(Navigation (Aeronautics))

SHKOL'NIK, G., shturman (Baku)

Analytical method for determining the position of an airplane  
by radio-navigational points. Grazhd.av. 12 no.2:21-22 F  
'55. (MIRA 16:1)  
(Radio direction finders)